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ELECTRICAL PROTECTION BRANCH
DEPARTMENT OF LABOUR

QUARTERLY BULLETIN

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REVISED RULES 4-010 TO 4-014 - MAXIMUM ALLOWABLE PERCENTAGE CONDUIT FILL - THERMOPLASTIC-INSULATED CONDUCTORS IN EXISTING RACEWAYS

It frequently has been pointed out that no provision is made, as is the case with Table 8, for an increase in maximum conduit fill in excess of that listed in Table 5A for rewiring existing raceways, and it has been suggested that there may be justifiable grounds for so doing.

Following discussion of the above listed subject at the 1964 Meeting of the Provincial Advisory Committee, it was agreed that it would be advisable, and reasonable, to make some provision for an increase in conduit fill where the rewiring of existing raceways with thermoplastic-insulated conductors is involved, in order that the principles followed in the revised rule calculations will be consistent with those established by Table 8. However, it was felt that these principles should only be warranted if the maximum allowable conduit fill is so limited that the total number of conductors will not approximate the figures established under previous editions of the Code for "TW" insulated conductors which were found unsatisfactory. After examination of the various technical problems involved and trends in Code practices, it was decided that it should be acceptable to calculate the maximum allowable conduit fill for rewiring existing raceways with thermoplastic-insulated conductors by using in this determination the cross-sectional areas of the equivalent size of rubber-insulated conductors and applying a 60% conduit fill rather than 50% on which Table 5A is based.

In accordance with the above outlined decisions, consideration may be given, on a special permission basis, to a 60% maximum allowable conduit fill where the conditions of installation justify some relaxation of the usual requirements. It should be emphasized that the application of the special permission concession will only be considered justified where the installer is involved in rewiring existing raceways for increased load where it is impracticable to increase the size of raceway due to structural conditions.

RULE 28-012 - TABLE 27 - USE OF IN DETERMINING SIZE OF CONDUCTORS FOR MOTORS

Occasionally inquiries are received as to the condition of service under which motors may be classified as operating under short-time, intermittent, periodic, or varying duties in order that Table 27 may be used in determining the size of motor branch circuit conductors. Therefore, to avoid problems which may develop through lack of uniformity in the application of the rule and associated Table, the following information is being provided to clarify the manner in which they are normally applied.

It will be noted that in the application of Table 27, the classification of service according to duty cycle determines the conductor sizes for motors for different requirements of service. To establish the classification into which a particular motor may fall, it is absolutely necessary to determine the actual operating conditions of the motor along with its duty cycle, characteristics, etc. For example, to be considered as having a five-minute rating on short-time duty, a motor must be designed to deliver its rated horsepower during periods of approximately five minutes duration with a shut-down interval between operations sufficient to allow excess heat engendered in the circuitry and motor to dissipate before the next operational, or load, cycle begins. To come within the other classifications of service, or any of the specific ratings listed, similar conditions would have to be met.

It is to be emphasized that the conductors of a branch circuit for an individual motor are to be of a size at least equal to that specified in Table 26 for the full load current rating of the motor except where a motor is designed and used for short-time, intermittent, periodic, or varying duty, under the specific conditions as shown in Table 27. Also, a motor application is considered to be one of continuous duty unless the nature of the apparatus which it drives is such that the motor will not operate continuously with load during any condition of use.

Extreme care is to be taken in any case where Table 27 is being applied, particularly when the use of conductors rated less than 125% of the motor nameplate current rating is being considered since, in such cases, it would usually be necessary to have complete manufacturers' technical data on the motor and the driven apparatus to ensure that the operational conditions and design characteristics would be compatible with the reduced size of conductors.

RULE 12-254 - MAXIMUM NUMBER OF OUTLETS PER CIRCUIT

In view of the introduction of rules (26-118 and 26-120) in the "CSA" Part I Code which increase the minimum number of receptacles to be provided in premises, it was proposed that consideration be given to reverting to the previous concept of allowing up to 12 outlets per circuit, even though receptacles are attached thereto. After discussion and consideration of the implications of this proposal by the various Part I Code Committees, an amendment to Rule 12-254 was processed and this has now been approved for inclusion in the next edition of the Code.

In view of the above listed developments and a recommendation made by the Provincial Advisory Committee that provision be made for the acceptance of installations having a maximum of 12 outlets per circuit when Supplement "R" to the Eighth Edition

of the Code is adopted, it is felt that the industry should now be allowed to take advantage of the rule amendment as approved by the Part I and Provincial Chairmen's Committees. Therefore, in accordance with the arrangements which permit the application of the amended rules in Supplement "R" on a permissive basis prior to their formal adoption, a maximum of 12 outlets per circuit will be accepted on installations undertaken following the publication of this Bulletin. It is to be understood that this exception does not apply where there are specific requirements for a lesser number of outlets, such as utility circuitry, etc. For clarification purposes, it should be explained that Clause (1) of Rule 12-254 has been revised to read: "There shall not be more than 12 outlets on any two-wire branch circuit except as permitted by other rules of this Code."

RULE 8-032 - CONDUCTORS SUPPLYING ELECTRIC RANGES IN SCHOOLS

Repetitive reports have been received which indicate that problems are being experienced with the tripping or actuating of overcurrent devices protecting branch circuits and/or feeder conductors supplying electric ranges used in Home Economics rooms in schools where the conductors and their respective protective devices are rated on the basis of demand loads as calculated under Rule 8-032 (1) (a) or (b) which are intended for domestic range applications.

In view of the above, it is evident that the type of usage under the foregoing conditions is such that the demand load of individual ranges, or groups, may approximate that of commercially used ranges in most cases. Therefore, in calculating the estimated demand load for ranges to be used in Home Economics class activities, it should be considered that they will be providing service comparative to that of commercial applications and the estimated load determined by the rating and use of the appliance in accordance with Clause (3) of Rule 8-032.

The application of the demand factors for domestic ranges in the above outlined situations may only be considered where there is positive assurance that the rating and use of the appliances will be equivalent to that found in normal domestic applications.

CHANGE IN "OFFICE HOURS" FOR PROVINCIAL ELECTRICAL PROTECTION BRANCH OFFICES

The industry is advised that during the months of July and August the office hours of the Provincial "Electrical Protection Branch" will be from 8:00 A.M. to 4:30 P.M., and subsequently thereto will revert to the usual office hours of 8:30 A.M. to 5:00 P.M.